

The role and place of networks in the female scientists' biography

Introduction

Today's workshop has been organised by SPICE and the research unit Cultural History of the University of Leuven, in collaboration with the online biographical database Bestor. Today I would like to talk to you about Bestor and its approach to document women scientists and networks.

Bestor is an online database that gathers information on Belgian scientists and scientific institutions (in notes such as this one [Jules Bordet]). Due to its wiki-format, which you may know from Wikipedia the database can easily visualize and adapt internal and external links among web pages. Hyperlinks refer the reader to related information; categories group web pages into meaningful ensembles. Bestor uses all kinds of connecting intermediaries: societies, events, awards, journals... Two specifications determine whether a scientist, institution and so on qualify for a note in Bestor: first of all, the person, institution or society must have roots in Belgium and secondly, only deceased scientists are taken into account.

Last year, Bestor started an inventory program on biographies of female scientists. The purpose was to restore the gender balance in the classical biographical reference books of Belgian science. Female scientists of the 19th and the beginning of the 20th century were hardly represented, whereas literature and especially sources show that these female scientists *were* present and active.

In this talk I want to elaborate on the reasons of this underrepresentation of women in the classical biographical dictionaries. After that, I will demonstrate how we can counterbalance this gender bias, by using a digital database like Bestor as a tool for embedding women scientists in the classical science biography genre. And finally, I will answer this question: what results will this way of proceeding bring to the Bestor database? Or putting it more generally: what positive effect can this method and this project bring to the genre of the Belgian science biography?

1 | A historiography of men

At the start of the project, in 2014, Bestor collaborators compiled an initial list, containing 27 names of 19th and 20th century female Belgian scientists. As of today, this list is still growing. Only a very limited number of these women, especially those of the early years, were presented in the Belgian scientific biographical standard works. One of these standard works is the *Florilège des sciences*. This anthology contains a number of selected biographies. It was edited by the Class of Sciences of the Belgian Royal Academy. In terms of gender equality, *Florilège* scores extremely poorly, with only one

woman in both, quite large, volumes. The more general biographic standard works, the *Biographie Nationale* and the *Nationaal Biografisch Woordenboek* are hardly any better. For instance, the *Nationaal Biografisch Woordenboek* with its 21 yearbooks and some 4,500 items, among which a few hundred scientists, counts only 5 female scientists. Commemorative books from universities such as the *Liber Memorialis* of the Ghent university (1913 and 1960) only contain biographies of professors; so, the number of female entries equals the number of female professors in that period: none! This is also the case for the commemorative books of other Belgian Universities. I will not elaborate on the other publications, but the picture is clear: the classical biographical canon of scientists is almost entirely male.

2 | Or rather... a historiography of institutes

The tendency to overlook the contributions of female scientists was accidental. Most of the classical biographical reference books should be seen as constituting a commemorative practice of an institutional world - inhabited by men. Furthermore, institutions like societies, academies, universities, and to a lesser extent, government institutions define for the science historian the most visual and 'classical' science networks.

The Belgian institutional science landscape gradually formed in the course of the 19th century. According to the customs of that time, these institutions were *de facto* male bastions. Female scientists were largely excluded, or they were not 'institutionalized' – in this way they underwent the same fate as the many autodidacts, amateur-scientists, inventors or the expedition travelers. Even if a woman was able to enter a university or a learned society, she never ascended high enough for responsible functions and thus to be entitled to a solid position such as professor, director, secretary etc.

As a consequence, these women were not part of the commemorative culture associated with these institutions, which further resulted in the fact that they were absent in all biographical productions that originated from these institutions: commemoration and tribute books, biographical dictionaries, obituary notes in yearbooks, members' books etc. These biographical documents being often used as the basis to other biographical notes, meant that these non-institutionalized scientists were also missed in the subsequent biographical cycle. Incomplete as they may be, yet all these documents are considered valuable instruments for the science biographers today.

The general summary is that non-institutionalized scientists, including most female scientists, were faced with the impossibility or the difficulty to enter the classical science historiography.

3 | Alternative networks for a historiography of non-institutionalized scientists

Bestor is an ideal tool to visualise networks. Through categories and hyperlinks a multilayered science network can be created. In past inventory projects, Bestor tended to follow the outlines of the 'classical' networks created by institutions. However, the database also presents the opportunity to broaden the scope, meaning that next to these primary scientific networks, also other kinds of networks can be visualised and embedded in the traditional networks.

This specific feature of Bestor is particularly interesting when it comes to the inventorying of female scientists. As this group did not get access to primary institutional networks, it has been very busy in the creation of alternative networks for its scientific activities. The characteristics of these networks are of a more personal nature. But be not mistaken: men do just the same. Their science careers also largely benefit from personal networks. However, in their biographical notes, those personal networks are largely ignored, because unlike the primary networks, they are considered less relevant.

Bestor can be used as a tool to visualise these networks and to graft them onto the institutionalised scientists in the database. Secondly, through analysis of the networks, careers and lives, ambitions and strategies can be reconstructed. In our search for alternative networks we distinguished three types of networks: informal science networks, horizontal and vertical transmitter networks and networks outside the science field, together with possible partner networks.

Informal science networks

With the term 'informal science network', we want to address to connections within the science world which in the science biography are considered as of minor importance, and that are harder to come by. These connections are often of a more personal nature. Congress participation may be taken as one example: whenever a female scientist is listed among the congress participants, new connections open up, in particular relating to how she has ended up there and who she potentially could have met. Also their memberships of associations and especially: who has nominated them?; the journals in which they publish, but especially why they chose these specific journals and who belongs to the editorial board? The ambitious Bertha De Vriese, first female assistant of the Ghent University (1903), for instance, published her very first articles in a journal called *Archives de Biologie*. Why this one? A quick look in the databank learns us that cofounder of the journal, which is already listed in the Bestor database, was one of her professors, the embryologist Charles Van Bambeke. It appears that De Vriese had appealed to this personal connection. Hereby De Vriese can be inscribed in the existing networks.

Also of interest here are fellow students. In many cases, fellow students may have been the foundation stones in the science network of women scientists. For example, the freshly graduated medicine student Clémence Everard, for some time worked together closely with Jules Bordet. As it appears, the two had been fellow students. Everard also published with another former fellow student in medicine and botany, Jean Demoor. Everard and Demoor published also together with a third actor, the botanist Jean Massart. Jean Demoor may well have been the link between Everard and the botanist, since the guys were long-time colleagues and friends. In short: we can see how Clemences science network gets shape through her fellow-student contacts.

In the sidelines of science: vertical and horizontal transmitter networks

The definition of this kind of networks originated from a specific finding: we observed that female scientists, instead of conducting the complete process of research, starting from data collection up to a final publication, often concentrated on just one limited phase/section of the research: inventorying, collecting, translating, illustrating, preparing, describing. This work was not of a secondary nature, but emphasizes the role of female scientists as cultural 'transmitters'. As a transmitter, women scientists had to integrate themselves into the network of other scientists. For example: Making a translation means that you have to obtain permission of the author, that you may correspond with him (!) on the best translation, that you have to deal with questions of publishers, and perhaps also to enlist the collaboration of other (male?) scientists. Female translators had to create adapted networks, which I would call vertical networks. Vertical networks denote collaborations between different parties involved. Female scientists, because they were often excluded from a regular academic or scientific career, appear to have been quite active in these vertical networks.

Taking the example of self-taught botanist Marie-Ann Libert. She collected and examined the flora of her own environment. She did not publish her findings herself, but handed them over, amongst others to Alexandre Lejeune and Augustin de Candolle, two botanists who prepared publications on the flora of the region. Only at the age of 50 a publication in her name was issued. Same story for the university educated botanist Hélène Durand. Her father, the botanist Theophile Durand and a number of his colleagues encouraged her to engage in botanical drawing. Her whole life was spent making drawings for scientific publications of Emile de Wildeman, Walter Robyns and other scientists of the Botanic Garden, and copying illustrations from books that outreached the budget of the Botanical Garden, making them available for Belgian botanists. Although a university educated botanist, Durand never undertook botanical research herself.

Also on— what I call — the 'horizontal line' female scientists formed networks. These networks can be seen as networks of persons working on the same level of activities. In the case of Fanny Maertens those persons were translators, and especially female translators. It must be stated here that it did not need to be translators of natural science works. A consequence indeed of the fact that these women were active in only one limited phase of the scientific work is that they could easily shift the object of their activity to other, non-scientific fields. And as far as Fanny Maertens was concerned: she translated not only natural science works but later on also English and Russian literature. Her network appears to follow the same outlines: MacLeod networked amongst others with Dina Logeman-van der Willigen, a professional translator. Logeman was widely considered as the ambassador of Scandinavian literature in Flanders. She knew a lot of Scandinavian writers in person and through her, a lot of translation assignments could be obtained. MacLeods relationship with Logeman-van der Willigen seems to have been friendship, but apparently, this relationship also yielded interesting assignments. Both women were in contact with Virginie Loveling, who also earned

a living through translating German works, interesting assignments she got through her cousin Paul Fredericq.¹ MacLeod herself was in contact with Paul through her friend Nica Fredericq.

Networks outside the science field

Thirdly, also the networks outside the scientific field are worth investigating, as these networks give an insight in social background and vision on society. And sometimes, they reveal hidden business strategies.

This was certainly the case with ambitious Bertha De Vriese. As a young woman, she joined Reiner Leven, a Lebensreform society, closely linked with the Ghent university campus life. She may have known this society through her colleague and collaborator, the well-known children's doctor and philanthropist Adolphe Miele. Miele was acquainted with the founder of Reiner Leven, George Sarton, and was also a close friend of the politician Edward Anseele. Through Reiner Leven De Vriese was in contact with Sarton, his wife and other scientists, like Paul Van Oye and Joseph Charles Bequaert and a number of female students amongst who was the flamboyant Vera Tordeur. They were all members. But De Vriese could also tap into the larger network of Reiner Leven, which consisted of professors of the Ghent university, progressive artists and opinion leaders among who can be mentioned the Lovelings, Anseele, Hendrik de Man, Frits van den Berghe, and Jozef Vercoullie, whose son De Vriese married. Furthermore, also scientists like Julius MacLeod, and probably also his wife and the family Fredericq. The example of De Vriese shows how a complex network of people, with various science connections as well, can be revealed.

Most striking part of the story is that Bertha De Vriese joined the society right after she failed to get her position as an assistant to the medical faculty extended, after hopeless endeavours. Her adherence was possibly an attempt to maintain her academic network, as the doors of the academic world closed down on her. In this way it tells us something about her career strategies.

Cupid and science

But also networks concerning professional life, family, women friendships and family friends are worth investigating. Pedagogue Isabelle Gatti de Gamond introduced herself to Marie Errera, the mother of the famous botanist Leo Errera. This friendship gave her access to the Brussels liberal and progressive elite that met in the Errera's salon, amongst which professors of the university. Gatti relied on this network which was very helpful at the time she created her schools for girls and was in need of highly qualified lecturers.

Special attention should be given to the partner network, in case the partner is a scientist. Female scientists often met their future scientist-husbands in the university auditorium. In other cases a

¹ Broomans, Petra, Van Voorst, Sandra en Smits, Karina (red.), [*Rethinking Cultural Transfer and Transmission: Reflections and New Perspectives*](#), Eelde, 2012.

husband with similar science interests was found their parents' circle of friends. This network offers a fascinating mix of data of both personal and business nature.

Quite often, husbands played a significant role in the science careers of their spouses. Through the institutionalised position of the husband, women also got access to people and goods which would otherwise be inaccessible to them. Through their husband they could tap into his institutional network in a respectable way. Self made botanist Elisa Destrée for example got via her husband in contact with Francois Crepin, the director of the National Botanical Garden. In this way she gained access to the rich library and collections of the Garden.

Quite often, the scientific work of married women followed the same lines as that of their husbands. In the classical literature it is stated that the faithful wife assisted her hardworking husband. In fact we can also state the opposite, that the woman used her husband as an way out to get her scientific work 'out there'.

4 | What does it generate?

What is the advantage of this inventory project for female scientists? First and foremost: women are now better represented in the scientific biographical genre. This process, once set in motion, does not seem to stop. By excavating networks, new names are unearthed every day.

Secondly: we notice that some female scientists prove to be perfectly embeddable into the existing classical networks, even though these women are not institutionalised in the classical way. I have in mind here the women that studied worked at a university in minor positions, like Bertha De Vriese or Yvonne Désirant, or those women who were active as unpaid volunteers in a national institution as was Elise Bommer, working for the National Botanic Garden. Women scientists that were self made cannot directly be embedded into in the classical networks. However, with the Bestor system we are now able to embed them, graft them onto biographies of institutionalised scientists, through their alternative networks.

A third and striking consequence of adding women to the science story is that all of a sudden, also informal networks of institutionalised scientists – male scientists – become more prominently present, which in the classical biographic genre were going unnoticed. We discover the personal substructure of the science business, the intimate networks and the unspoken strategies of the institutionalised scientists. Their personal visions and ideas, their views on society can be detected. This often asks for re-writing of the biographies of men.

Especially the partner network is given greater emphasis. This network is being neglected, particularly in the classical male biographies, although both partners add value to the scientific activity of each other. For instance: adding Fanny Maertens' biography to the one of Julius MacLeod also gives us a better idea about the science business of Julius, about his social networks and his strategies. When Fanny translates Kropotkin's work on the evolution theory, Julius writes the introduction to it. The underlying reason for him to do so seems to be publicity for himself. A reviewer of Fanny's Kropotkin translation gives a clue: 'The fact that *he* has not been reluctant to connect *his* name in this question to that of Kropotkin, makes us look forward more than ever to the

publication of MacLeods' book on natural history of societies'. Maertens and MacLeod seem to carefully have built up a network of progressive and free-thinking people, to whom they can propagate their joint project on the evolution theory. He did so through his own natural science research and she did it via chosen and targeted translations, especially of sociological works.

Generally speaking one can conclude that in considering also women and their networks, one gets a better understanding of the overall science business. By showing the role women play in the science network, you get a broader vision on science.

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